

Abstract of the Disclosure

The invention relates to methods and compositions for selectively directing stem cells to a target tissue within a subject using a system that employs one or more vectors that contain a gene switch/biosensor, a tissue-specific promoter, a gene encoding a stem cell-attracting chemokine, and a gene amplification system. In one embodiment, a stem cell-attracting chemokine is expressed in damaged tissue using a stimulus-responsive vector system. The stimulus can be a physiological stimulus associated with cell injury, such as hypoxia or elevated glucose levels, for example. Expression of the chemokine increases the trafficking of stem cells to the damaged tissue.